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Information Security of Knowledge Economy Students

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Abstract: The issues of computerization, informatization and, recently, internetization of education demand deep analysis of impacts initiated by them in development of a man. The results of such analysis proved that optimal conditions must be formed for creative development of the students in order to avoid non-desired consequences in their psychological, socio-cultural conditions. All things around a modern person are connected with informational technologies in society - knowledge economy. The software and hardware resources are constantly renewed. In the education system new spheres appear which are intended to self-cognition of the students. In such spheres the means for providing physical and psychological health must be used. In all educational spheres e-learning technologies must be also implemented in order to cognize informational environment better - and provide personal security. In order to learn to avoid psychological numbness because of non-desired information, to teach “digital generation” to think - this is the goal of education system today. Analysis of existing threats and dangers originating from the use of internet-resources has shown that information security is obligatory condition to provide positive personal development of all participators of education environment.

Key words: Information % Information technologies % Information resources % Information threats and dangers % Digital generation % Psychological shock % Education system % Information explosion % Information crisis % Information society % Information revolutions % Information security of a man % Educational environment % Pedagogical conditions % Content filtering % Knowledge economy % Future.

INTRODUCTION

Analysis of existing threats and dangers which are determined by use of Internet-resources has shown that information security is obligatory condition to provide positive personal development of all participators of education environment. Identification of pedagogical conditions which significantly influence information security in the course of forming experiment has lead to the discovery that they are the external factor facilitating realization of the right for getting qualitative education.

Review of computerization, informatization and recently, internetization of education pointed out to necessity to analyze thoroughly the impacts initiated by them in the development of a man and to prepare optimal conditions for creative progress of students to avoid non-desired psychological and socio-cultural consequences. Provision of information security of students is a theoretical grounds of the mechanism of creation of safe information-educational environment. This is manifested in more uniform and steady psychological state of students while using information from internet and also in more distinct identification of the most important educational milestones and values in information space by students - which characterizes completeness of information culture of students.

MATERIALS AND METHODS

Targets and values of information-educational environment are free from manifestations of negative impact on the students. Today new perspectives have been formed for further study of the problem of providing information security in the context of the security culture of people of XXI century, ideas of open education in information environment, methods of education informatization. Principal difference is in much more number of communications. Copying, but not creation of

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intellectual product - by means of printing editions, TV, radio and now by Internet, with the use of mobile systems and smart devices - this is radical difference of modern information society. Today information is understood by people as communication, not knowledge. It means that informed man is not a man who knows more but the one who participates in big number of communications. Therefore we can conclude: information today can be defined as communication.

The latest technologies in the areas of micro-electronics, computer and other technologies and what is most important, their cumulative effect influences society greatly. Information society is understood as society where information has become dominating component of economic and social life. Today it is knowledge production which serves as the source for economic growth in developed countries. In a number of countries they regularly organize transnational summits devoted to the issues of knowledge economy. The base of knowledge economy is education. In modern world economy is driven by competition. And it is more and more restricted to competition in knowledge. In Russia in the beginning of the new century a transition to a new economy takes place - the next stage in development of information society - the economy of knowledge.

Main Part: In this article we shall try to understand the phenomenon of information as a key notion with due regard to opportunities which have appeared thanks to technologies of information processing.

Depending on the knowledge area and approach *information* is defined in different ways:

In Philosophy: Information is interpreted as reflexion, development, specific movement etc. It is understood that information from the very beginning is considered independent essence able to exist without reflexion.

In Sociology: Information - is a characteristic of social systems, social changes, the basis of social relationship, content of interaction. Information is a key factor of self-organized systems of any kind.

Formation of information society is not possible without information as key product of social practice.

In Natural Sciences: Information is connected with evolution process, development of life which is not possible without transformation of information, its management. V. Glushkov in 1987 defined information as a measure of unevenness of matter and energy distribution, a measure of changes. A. Kolmogorov suggested that information is objective identification, not ensemble (Shennon), which in very close to modern understanding of informatics. [7].

In cybernetics information is a central category, more general than notions of relationship and management. Winer in 1948 proposed information vision of this science about management and relationship in living organisms, society and machines.

In 21st century we can conclude that information has become a common notion for all sciences and information approach which includes specific ideas and the complex of mathematical means has became inter-disciplinary.

By now we can say that the stage of cognition of information nature is finished: it began with its understanding as a message sent by people and finished by philosophic concept of information as conveyed side of reflection.

So, in philosophy for more than 3 decades there exist two different approaches, two opposed to each other concepts of information - attributive and functional. Hence information technologies have two-way (dual) role: on the one hand this is a mechanism of transformation of knowledge into information resource o society, on the other hand this is a way of realization of social technologies and transformation of them into socio-informational technologies which can be directly used by people in state management and social self-government systems.

Study and development of the theory of information technologies and their place in intellectualization of society at current stage is performed by relatively young science of informatics. [2]. Information exponential growth law says that one of the key features of our time is constant growth of information volumes. This phenomenon is called by information explosion. Apart from mechanical increase in information volumes to the size when its direct processing is impossible, this situation provokes a number of specific problems connected with quick development of information technologies.

For example, the effect of information explosion was phenomenon known to everybody - information crisis. When there is abundant volume of information a man suffers big difficulties while trying to access it - because of terminological, language, technical and other barriers. Information crisis is determined not only by increased volume of information produced by society but its ratio to perception abilities of a man, abilities to process, pass and

keep information. Health and security of a present-day man is connected with information and information technologies. [1].

Constant information shock can be felt by any person if an avalanche of information is falling on him all the time, which exceeds his perception and processing abilities. A. Veryaev defines information crisis as a state of society “when there is material in society but it is impossible to use it” [1]. Information technologies - technologies connected with information processing.

In information society information technology of data processing is intended for solution of well-structured problems in regard to which input data are available and the algorithms and other standard procedures of their processing are known. That is why introduction of information technologies and systems on this level will significantly increase labour productivity of the staff, will free it from routine operations, possibly reduce the number of employees.

Thus, we shall consider information is communication - operation of symbols translation which gives an urge to action.

Such interpretation of information explains why the main phenomenon of computer revolution was Internet, not information explosion - (gigantic data banks) or artificial intellect. Artificial intellect in spite of all intensifications in the sphere of technologies will never reach the level of human consciousness.

In all spheres of its existence a man will be surrounded more densely by the technical forces. Modern Japan, an example of high-tech economy, is still sensitive to useful ideas as Japan of past times, pre-industrial and post-industrial epochs. It is clearly demonstrated by “gamization” effect - implementation of game-like technologies everywhere. Kadzima Eiiti, a teacher of female college in Sagami points out that intensive development of gamization is connected with big problems and even threats: possible drain of personal data, consciousness manipulation threat, computer addiction. The companies are interested in high rate of visiting their websites and apply efforts to keep a customer at the site as long as possible, being exposed to advertising influence. And because in social networks people communicate with other users, the probability of addiction increases, transforming Japan society into analogue of tamagochi society (Ogonek magazine, # 28 (5237), 16.07.2012: http://www. kommersant. ru/doc/ 1967492).

CONCLUSION

Mentioned above dangers are not abstract at all. It is not possible to stop the development of information society. This motion can not be stopped neither by any commission of prominent state leaders, scientists and engineers, nor by a conference of leading actors in industry and trade. The question asked by M. Heidegger is actual today: "Will be a man under the reign of unstoppable technical forces of superior strength, unprotected and lost?"

Academician V. Glushkov while talking about continuation of the progress in science wrote that in this context no machine or combination of machines which is the end the product of collective activity of people can be cleverer than mankind as a whole, because in such case on one scales’ pan a machine is placed, on the other - the whole mankind with invented by it machinery, including the machine in question. It is worth mentioning that a man will always be a final judge of intellectual and material values, including values created by machines, so in these terms a machine can never surpass a man".

Main provisions of G. McLuhan theory including axiom " medium is the message ", concept of hot and cold media, idea about communication means as continuation of a man, thoughts about the role of scientific discoveries in invention of new technologies, about driving force of communications in development of individual and civilization as a whole, are considered in the work "Understanding communication means" [5]. In his opinion mass media “massage” a man, creepingly changing perception laws. Such approach gives a key to both understanding of the character of modern technologies and social trends and non-adequacy of theories about information security based on the F. Bacon’s idea that "knowledge is a force". In his opinion, adequate sociology of communication by electronic means is only possible when science is considered as one of the discourse forms, side by side with others [7].

M. Poster emphasizes that easiness in copying and distribution of information will ruin the law system, whose foundations were formed for protection of private ownership for material things. He insists that in epoch of convergence of computers and communication means it is not possible to understand social relations if the changes in the structure of ccommunication experience will not be taken into account. It is worth mentioning possibilities of information modeling as “modeling of oneself” [7].

Commercialization of Internet takes place mainly because of advertising flow [12]. User who is seeking for information by key words faces rather difficult problem: evaluation and classification of information by its practical significance and scientific truth.

Inference: In the era of information society where access to data and facts is many times easier, education must provide opportunity for every man to use this information, collect, select, order, manage and use it. Education system must constantly adapt itself to these changes in society, not ignoring transfer of achievements, main knowledge, human experience results. Looking for ways of realization of sustainable development as a strategy of XXI century is closely connected with solution of the problem of intensification of human intellect at the expense of opportunities which informatization can provide. In the context of survival problem informatization is defined as "activity process of more complete possession of information with the purpose of cardinal increase in intellectual level of civilization and on this base - humanitarian reconstruction of all life activity of a man" (A. Ursul). It is necessary to take into account that key competences approved by the European Council in 1996 are as follows: “competences connected with increase in informatization of society. Using this technologies, understanding their advantages and disadvantages and ways of critical attitude to information distributed by mass-media means and advertising (Letopisi.Ru).

In Russia of 21st century the problem of negative influence of Internet was addressed on the level of State order in 2011. Children in Russian Federation must be protected from destructive injuring impact of Internet. Here we have the question about information component of safe behaviour of the schoolchildren in the network and efficient pedagogical and psychological means to provide it. Analysis of works on the problem of information security of students allows to identify objective (content filtering of resources) and subjective (information competence) approaches to its provision. Content filtering of Internet-resources is understood as intellectual process or software support for filtering resources by its contents which will not allow to get access to non-desired services or contents of information exchange. For all educational facilities of Russian Federation use of content filtering means is obligatory since 01.09.2011. This can be achieved thanks to technologies: categorization; building of the list of “white” and “black” resources; control over access; data filtering [1]. Existing computer programs are divided into free of charge (Mozilla Firefox with Adblock Plus; internetwork filter Iptables for Linux; “Famoly security” Windows Live 2011 for ÎS Vista è 7 etc.) and commercial (Kaspersky Internet Security 2010; Avira Premium Security Suite; Dr.Web Security Space etc.)

Today digital generation is learning in the conditions of the last stage of information security formation - knowledge economy. Its idea is that all software resources are constantly renewed and created on the base of more effective protocols, operation systems, formats, codecs and other products [4]. A man as biological creature has not changed greatly, but all its environment is connected with Internet, IT, PC. Many scientists try to predict future.

For example futurologist D. Glukhovsky shows what has happened to mankind as a result of realization of Choice law. People having re-coded DNA got immortality. The book of American futurologist and publicist E. Toffler "Shock from future" emphasizes high speed of cultural political changes. Mankind can be lost - not because of ecological catastrophe, nuclear explosion or exhausted resources. Shock suffered by people will result in psychological numbness, the most real danger which is awaiting us. How to help modern digital generation to avoid such shock? What makes mankind happy? It is necessary to improve intellect of new generation, evoke interest in face-to-face communication, to learn them to think - this is the goal of modern education. To teach to learn.

Some of us remember the project of a teacher Sugat Mitr "Hole in the wall" - pedagogical breakthrough: in 1999 he and his colleagues mounted computers, connected to Internet and left them alone shooting everything by hidden camera. The unbelievable result was demonstrated: children who were not familiar with computer at all tried on their own to learn using computer, in particular, Internet, but the most unbelievable thing was that these children were from poor families, without education. Hole in the wall project demonstrated that even without any contact with a teacher, only through atmosphere which stimulates curiosity an education process can be started as self-learning and knowledge exchange. Scientists believe that if IT will go on developing so rapidly, artificial intellect and cognitive mind are quite possible.

Education system in new history must solve many problems because in the beginning of XX century information crisis worsened. J. Delore in his work "Education: necessary utopia" writes about distinct gap

between huge amount of knowledge and ability to use it. UNESCO Commission believes that there must be an opportunity to continue education even after 20 year age [10]. New areas must appear in education system - such as self-cognition and means of physical and psychological health, as well as learning with the use of ICT aimed for better understanding of information environment. It is necessary to create pedagogical conditions to provide information security of a man in future.

It is possible that when computer will start to think like a man, it will not be so dangerous. The worst thing will happen if after information revolutions a man stops thinking like computer.

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